

CLAIMS

1. Apparatus for illuminating documents or other items that may be laminated, have special inks or special coatings, and special security features, to expose optically variable devices and other indicia in or on the documents and their laminates, where the illumination must be at specific angles with respect to the surface of a document for the optically variable devices and other indicia to be seen, said apparatus comprising:

a first plurality of lights that are positioned with respect to a document to illuminate it at a first angle;

a second plurality of lights that are positioned with respect to a document to illuminate it at a second angle; and

means for illuminating the first plurality of lights and the second plurality of lights at different levels of intensity,

wherein as the first plurality of lights and the second plurality of lights are lit at different levels of intensity the effective angle of the illuminating light may be varied between the first angle and the second angle.

2. The invention in accordance with claim 1 wherein when the first plurality of lights and the second plurality of lights are lit at different levels of intensity, the intensity of the first plurality of lights is increased as the intensity of the first plurality of lights is decreased and visa versa.

3. The invention in accordance with claim 2 wherein the first plurality of lights and the second plurality of lights are located below and to a first side of a document to be illuminated, and further comprising:

a third plurality of lights that are positioned with respect to a document to illuminate it at the first angle;

a fourth plurality of lights that are positioned with respect to a document to illuminate it at the second angle; and

8 means for illuminating the third plurality of lights and the fourth plurality of lights at
9 different levels of intensity,

10 wherein as the third plurality of lights and the fourth plurality of lights are lit at different
11 levels of intensity the effective angle of the illuminating light may be effectively varied between
12 the first angle and the second angle.

1 4. The invention in accordance with claim 3 wherein the first and second plurality of lights
2 or the third and fourth plurality of lights may be selectively lit by the illuminating means to
3 rotate the direction from which light illuminates the document while at the same time effectively
4 varying the angle between the first angle and the second angle.

1 5. The invention in accordance with claim 4 wherein the first and the third plurality of lights
2 comprise light emitting diodes that emit white light and near infrared light, and ones of these
3 light emitting diodes are energized by the illuminating means to illuminate the document with
4 white light or near infrared light.

1 6. The invention in accordance with claim 1 further comprising:
2 a third plurality of lights that are positioned with respect to a document to illuminate it at
3 the first angle;

4 a fourth plurality of lights that are positioned with respect to a document to illuminate it
5 at the second angle; and

6 means for illuminating the third plurality of lights and the fourth plurality of lights at
7 different levels of intensity,

8 wherein as the third plurality of lights and the fourth plurality of lights are lit at different
9 levels of intensity the effective angle of the illuminating light may be effectively varied between
10 the first angle and the second angle.

1 7. The invention in accordance with claim 6 wherein the first and second plurality of lights
2 or the third and fourth plurality of lights may be selectively lit by the illuminating means to

3 change the direction from which light illuminates a document while at the same time effectively
4 varying the angle between the first angle and the second angle.

1 8. The invention in accordance with claim 7 wherein the first and the third plurality of lights
2 comprise light emitting diodes that emit white light and near infrared light, and ones of these
3 light emitting diodes are energized by the illuminating means to illuminate the document with
4 white light or near infrared light.

1 9. A method for illuminating documents that may be laminated to expose optically variable
2 devices and other indicia in or on the documents and other items and their laminates, where the
3 illumination must be at specific angles with respect to the surface of a document and their
4 laminates for the optically variable devices and other indicia to be seen, said method comprising
5 the steps of:

6 illuminating the document with a first light source to illuminate the document at a first
7 angle;

8 illuminating the document with a second light source to illuminate the document at a
9 second angle;

10 varying the intensity of the illumination from the first light and the second light sources
11 to effectively vary the angle of light on the document between the first angle and the second
12 angle.

1 10. The method in accordance with claim 9 wherein the intensity of the first light source is
2 increased as the intensity of the second light source is decreased and visa versa to effectively
3 vary the angle of light on the document between the first angle and the second angle.

1 11. The method in accordance with claim 10 further comprising the steps of:

2 illuminating the document with a third light source to illuminate the document at a third
3 angle;

4 illuminating the document with a fourth light source to illuminate the document at a
5 fourth angle;

6 varying the intensity of the illumination from the third light and the fourth light sources
7 to effectively vary the angle of light on the document between the third angle and the fourth
8 angle.

1 12. The method in accordance with claim 11 further comprising the steps of:
2 selectively illuminating the document with the third light source or the fourth light source
3 to change the direction from which light illuminates the document while at the same time
4 effectively varying the angle of illumination between the first angle and the second angle.

1 13. The method in accordance with claim 12 wherein there are a plurality of light sources
2 grouped as sets of light sources, and each set of light sources are located at a different position to
3 illuminate the document from different directions.

1 14. The method in accordance with claim 13 wherein after a set of light sources are selected
2 to pick the direction from which a document will be illuminated, the intensity of the illumination
3 of each of the selected set of lights will be varied to effectively vary the angle of the light on the
4 document to view optically variable devices and other indicia in or on the documents and their
5 laminates or coatings.

1 15. A method for illuminating documents and other items that may be laminated to expose
2 optically variable devices and other indicia in or on the documents and their laminates, where the
3 illumination must be at specific angles with respect to the surface of a document and their
4 laminates for the optically variable devices and other indicia to be seen, said method comprising
5 the steps of:
6 illuminating the document with a selected one of a groups of lights where each group of
7 lights comprises a set of light sources, each set of light sources are located at a different position
8 to illuminate the document from different directions, and wherein one of each set of light sources
9 illuminates the document at a first angle and the other of each set of light sources illuminates the
10 document at a second angle; and

11 varying the intensity of the illumination from each of the sets of light sources of the
12 selected group of lights to effectively vary the angle of light on the document between the first
13 angle and the second angle.

1 16. The method in accordance with claim 15 wherein when the intensity of one of a set of
2 light sources is increased the intensity of the other of the set of light sources is decreased and
3 visa versa.
